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NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION			PIZIALI, JEFFREY J	
P.O. BOX 506			ART UNIT	PAPER NUMBER
MERRIFIELD, VA 22116			2629	
NOTIFICATION DATE		DELIVERY MODE		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/708,638	LIN ET AL.	
	Examiner	Art Unit	
	Jeff Piziali	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 25 September 2008 and 10 June 2008.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1,3-10 and 19 is/are pending in the application.
 - 4a) Of the above claim(s) 6 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1,3-5,7-10 and 19 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 17 March 2004 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application
- 6) Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's *election of Group I (claims 1, 3-5, 7-10, and 19)* in the reply filed on 25 September 2008 is acknowledged and appreciated.

Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

4. The drawings have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the figures.

Specification

5. The disclosure is objected to because of the following informalities:

The term, "*display control 18*" should be corrected, for example to, "*display controller 18*" (see Paragraph 4, Line 12).

Appropriate correction is required.

6. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 3-5, and 7-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 3 recites, "*a state machine for generating a setting value according to the comparison result and outputting the setting value to the mirror ratio controller to adjust the mirror ratio*" (line 6).

Claim 9 recites, "*the state machine enters a first operating state for adjusting the setting value to drive the mirror ratio controller to lower the mirror ratio if the comparison result corresponds to a first logic level, and the state machine enters a second operating state for adjusting the setting value to drive the mirror ratio controller to raise the mirror ratio if the comparison result corresponds to a second logic level.*"

Claim 10 recites, "*the state machine will leave the first operating state and enter a third operating state for holding the setting value if the state machine stays at the first operating state, and the comparison result corresponds to the second logic level, and the state machine will leave the second operating state and enter the third operating state for holding the setting value if the state machine stays at the second operating state, and the comparison result corresponds to the first logic level.*"

However, the closest the specification ever comes to an enabling disclosure for making a "state machine" is this: "*Generally speaking, the state machine 78 is built by a plurality of flip-flops. After the state machine 96 enters the operational state 96, the state machine, therefore, stops flip-flops from being triggered to achieve the objective of holding the setting value SET*" (see Paragraph 32, Line 1 and Figure 5).

No specific explanation or guidance is provided of how "***the state machine 78 is built by a plurality of flip-flops.***"

As such, the claims contain "***state machine***" subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

9. The remaining claims 4, 5, 7, and 8 are rejected under 35 U.S.C. 112, second paragraph, as being dependent upon one or more rejected base claims.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 1, 3-5, 7-10, and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

12. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "***A display controller for driving a monitor comprising...***" (line 1).

For example: It would be unclear to an artisan whether the subject of "***comprising***" is intended to be the "***display controller***" or rather the "***monitor***."

An omitted structural cooperative relationship results from the claimed subject matter: "*A display controller for driving a monitor comprising...*" (line 1); "*the converter comprising...*" (line 3); "*the current mirror circuit comprising...*" (line 8); and "*a voltage calibration circuit*" (line 15).

For example: It would be unclear to an artisan whether the "*voltage calibration circuit*" is intended to be a part of the earlier claimed "*current mirror circuit*," "*converter*," and/or "*display controller*."

13. Claim 1 is amenable to two or more plausible claim constructions.

The use of the phrase "*a current mirror circuit*" (line 5) renders the claim indefinite.

The claimed "*current mirror circuit*" is amenable to two plausible definitions.

Based on the description provided in the Specification, "*current mirror circuit*" could be interpreted to mean:

(a) The circuitry formed by the combination of transistors 82, 83a, 83b, and/or 83c in Figure 3 (e.g., *see Paragraph 17*).

(b) The circuitry formed by the combination of transistors 82, 83a, 83b, 83c, and/or voltage calibration circuit 68 in Figure 3 (e.g., *see Paragraphs 16-17*).

Thus, neither the Specification, nor the claims, nor the ordinary meanings of the words provides any guidance as to what Applicant intends to cover with this claim language.

Due to the ambiguity as to what is intended by the claimed "*current mirror circuit*" and the fact that this claim element is amenable to two or more plausible claim constructions, this

claim is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that the Applicant considers to be the invention.

See *Ex parte Miyazaki* (BPAI Precedential 19 November 2008).

14. Claim 1 recites the limitation "*the display driving voltage*" (line 17). There is insufficient antecedent basis for this limitation in the claim.

For example: It would be unclear to an artisan whether "*the display driving voltage*" limitation is intended to refer to the earlier claimed "*a display driving voltage*" and/or "*a reference display driving voltage*."

15. Claim 3 recites the limitation "*the display driving voltage*" (line 4). There is insufficient antecedent basis for this limitation in the claim.

For example: It would be unclear to an artisan whether "*the display driving voltage*" limitation is intended to refer to the earlier claimed "*a display driving voltage*" and/or "*a reference display driving voltage*."

16. Claim 4 recites the limitation "*the display driving voltage*" (lines 2 and 4). There is insufficient antecedent basis for either limitation in the claim.

For example: It would be unclear to an artisan whether each "*the display driving voltage*" limitation is intended to refer to the earlier claimed "*a display driving voltage*" and/or "*a reference display driving voltage*."

17. Claim 5 is indefinite where it specifies "*predetermined amount*" (line 3), since "*predetermined*," according to applicant's definition, merely means "*determined beforehand*." For example, see Joseph E. Seagram & Sons, Inc. V. Marzall, Comr. Pats., 84 USPQ 180 (Court of Appeals, District of Columbia).

18. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: "*mirror ratio setting units*" (line 3) and "*a plurality of mirror ratio setting units*" (line 2).

For example: It would be unclear to an artisan whether these limitations are intended to refer to identical or distinct "*mirror ratio setting units*."

19. Claim 7 recites the limitation "*the mirror ratio setting units*" (line 1). There is insufficient antecedent basis for this limitation in the claim.

For example: It would be unclear to an artisan whether this limitation is intended to refer to the earlier claimed "*mirror ratio setting units*" (claim 5, line 3) and/or "*a plurality of mirror ratio setting units*" (claim 5, line 2).

20. Claim 8 recites the limitation "*the mirror ratio setting units*" (line 1). There is insufficient antecedent basis for this limitation in the claim.

For example: It would be unclear to an artisan whether this limitation is intended to refer to the earlier claimed "***mirror ratio setting units***" (claim 5, line 3) and/or "***a plurality of mirror ratio setting units***" (claim 5, line 2).

21. Regarding claim 8, the word "***means***" is preceded by the words "***current mirror***" (line 2) in an attempt to use a "***means***" clause to recite a claim element as a means for performing a specified function.

However, since no function is specified by the words preceding "***means***," it is impossible to determine the equivalents of the element, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967).

22. Claim 8 is amenable to two or more plausible claim constructions.

The use of the phrase "***a current mirror means***" (line 2) renders the claim indefinite.

The claimed "***current mirror means***" is amenable to two plausible definitions.

Based on the description provided in the Specification, "***current mirror means***" could be interpreted to mean:

(a) The circuitry formed by the combination of transistors 82, 83a, 83b, and/or 83c in Figure 3 (e.g., see Paragraph 17).

(b) The circuitry formed by the combination of transistors 82, 83a, 83b, 83c, and/or voltage calibration circuit 68 in Figure 3 (e.g., see Paragraphs 16-17).

(c) One or more of the wires connecting transistors 82, 83a, 83b, and/or 83c in Figure 3.

Thus, neither the Specification, nor the claims, nor the ordinary meanings of the words provides any guidance as to what Applicant intends to cover with this claim language.

Due to the ambiguity as to what is intended by the claimed “*current mirror means*” and the fact that this claim element is amenable to two or more plausible claim constructions, this claim is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that the Applicant considers to be the invention.

See *Ex parte Miyazaki* (BPAI Precedential 19 November 2008).

23. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter: “*a current mirror means*” (claim 8, line 2) and “*a current mirror circuit*” (claim 1, line 5).

For example: It would be unclear to an artisan whether these limitations are intended to refer to identical or distinct elements.

24. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01.

An omitted step results from the claimed subject matter: "the state machine will leave the first operating state and enter a third operating state for holding the setting value if the state machine stays at the first operating state" (line 1).

For example: It would be unclear to an artisan whether this limitation entails the state machine leaving the first operating state; or rather the state machine staying at the first operating state.

An omitted step results from the claimed subject matter: "the state machine will leave the second operating state and enter the third operating state for holding the setting value if the state machine stays at the second operating state" (line 1).

For example: It would be unclear to an artisan whether this limitation entails the state machine leaving the second operating state; or rather the state machine staying at the second operating state.

25. The remaining claims are rejected under 35 U.S.C. 112, second paragraph, as being dependent upon rejected base claims.

26. The claims are rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

As a courtesy to the Applicant, the examiner has attempted to also make rejections over prior art -- based on the examiner's best guess interpretations of the invention that the Applicant is intending to claim.

However, the indefinite nature of the claimed subject matter naturally hinders the Office's ability to search and examine the application.

Any instantly distinguishing features and subject matter that the Applicant considers to be absent from the cited prior art is more than likely a result of the indefinite nature of the claims.

The Applicant is respectfully requested to correct the indefinite nature of the claims, which should going forward result in a more precise search and examination.

Claim Rejections - 35 USC § 102 / 103

27. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

28. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

29. Claims 1, 3-5, 7-10, and 19 are rejected under 35 U.S.C. 102(b) as anticipated by *Dingwall (EP 780986 A2)*; or, in the alternative, under 35 U.S.C. 103(a) as obvious over *Dingwall (EP 780986 A2)* in view of *Plus et al (US 5,170,155 A)*.

Regarding claim 1, *Dingwall* discloses a display controller [e.g., *Fig. 1*] for driving a monitor [e.g., *Fig. 1: 16*] comprising:

a graphics chip [e.g., *Fig. 1: 11, 14, 21*]

for outputting [e.g., *Fig. 1: 22*] a display data [e.g., *Figs. 1, 2: W*]; and

a converter [e.g., *Figs. 1, 2: 23*]

for converting the display data into a display driving voltage [e.g., *Figs. 1, 2: OUT*],

the converter comprising:

a current mirror circuit [e.g., *Fig. 2: 110 (1-255), 111*]

for generating an output current [e.g., *Fig. 2: 1123*]

according to a reference current [e.g., *Fig. 2: 1111*] and the display data,

the output current and the reference current corresponding to a mirror ratio,

the output current being delivered to the monitor

for generating the display driving voltage,

the current mirror circuit comprising:

a first current route [e.g., *Fig. 2: 111*]

for delivering the reference current; and

a plurality of second current routes [e.g., *Fig. 2: 110 (1-255), 111*]

electrically connected to the first current route

for delivering a plurality of mirror currents [e.g., *Fig. 2: 1110 (1-255)*]

to an output port of the converter [e.g., *Fig. 2: 124*]

to form the output current, wherein

the plurality of mirror currents have magnitudes differing from each other by a factor of two, and

the plurality of mirror currents add together to form the output current; and

a voltage calibration circuit [e.g., *Fig. 2: 125, 130, 131, 143, 150*]
for modifying the mirror ratio
according to the display driving voltage and a reference display driving voltage [e.g., *Fig. 2: VREF*] and
adjusting the output current
to drive the display driving voltage
to approach the reference display driving voltage (*see the entire document, including Column 3, Line 13 - Column 7, Line 26*).

Should it be shown that **Dingwall** discloses the intended "voltage calibration circuit" with insufficient specificity; **Plus** is incorporated as a secondary/combinational reference.

Plus discloses additional details for making and using voltage calibration circuitry [e.g., *Figs. 1-3: 24*] for providing a display driving voltage approaching a desired display driving voltage (*see the entire document, including Column 2, Line 30 - Column 5, Line 65*).

Dingwall and **Plus** are analogous art, because they are from the shared inventive field of drive circuits for liquid crystal display devices. Moreover, **Dingwall** discloses the potential for combining together the inventions of the two references [e.g., **Dingwall**: *Column 1, Line 17; Column 4, Line 10*].

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to use **Plus'** comparator circuitry [e.g., **Plus**: *Figs. 1-3: 24*] with **Dingwall's** summation type digital-to-analog converter circuitry [e.g., **Dingwall**: *Figs. 1, 2: 23*]; so as to enhance the speed and accuracy of the combined display device [e.g., **Plus**: *Abstract*] while preventing any accuracy mismatch between the D/A converters [e.g., **Dingwall**: *Column 2, Line 31*]; resulting in the invention as instantly claimed.

Regarding claim 3, **Dingwall** discloses the voltage calibration circuit comprises:

a mirror ratio controller [e.g., *Fig. 2: 143-147*]
for controlling the mirror ratio;
a comparator [e.g., *Fig. 2: 131*]
for comparing the display driving voltage with the reference display driving voltage to generate a comparison result [e.g., *Fig. 2: ERROR*]; and
a state machine [e.g., *Fig. 2: 141, 142, 150, CPI, CP2*]
for generating a setting value [e.g., *Fig. 2: VCPI, VCP2*]
according to the comparison result and
outputting the setting value to the mirror ratio controller
to adjust the mirror ratio (*see the entire document, including Column 4, Line 14 - Column 7, Line 26*).

Regarding claim 4, **Dingwall** discloses the setting value is used for lowering the mirror ratio

if the display driving voltage is greater than the reference display driving voltage, and
the setting value is used for raising the mirror ratio
if the display driving voltage is not greater than the reference display driving voltage (see
the entire document, including Column 3, Line 13 - Column 7, Line 26).

Regarding claim 5, **Dingwall** discloses the mirror ratio controller comprises
a plurality of mirror ratio setting units [e.g., *Fig. 2: 144-147*], and
the mirror ratio controller activates a predetermined amount of mirror ratio setting units
according to the setting value
for adjusting the mirror ratio (see *the entire document, including Column 4, Line 14 -*
Column 7, Line 26).

Regarding claim 7, **Dingwall** discloses the mirror ratio setting units correspond to a
plurality of adjustment magnitudes
when adjusting the mirror ratio (see *the entire document, including Column 4, Line 14 -*
Column 7, Line 26).

Regarding claim 8, **Dingwall** discloses each of the mirror ratio setting units is electrically
connected to the first current route
through a current mirror means (see *the entire document, including Column 4, Line 14 -*
Column 7, Line 26).

Regarding claim 9, **Dingwall** discloses the state machine enters a first operating state for adjusting the setting value to drive the mirror ratio controller to lower the mirror ratio if the comparison result corresponds to a first logic level, and the state machine enters a second operating state for adjusting the setting value to drive the mirror ratio controller to raise the mirror ratio if the comparison result corresponds to a second logic level (*see the entire document, including Column 4, Line 14 - Column 7, Line 26*).

Regarding claim 10, **Dingwall** discloses the state machine will leave the first operating state and enter a third operating state for holding the setting value if the state machine stays at the first operating state, and the comparison result corresponds to the second logic level, and the state machine will leave the second operating state and enter the third operating state for holding the setting value if the state machine stays at the second operating state, and

the comparison result corresponds to the first logic level (*see the entire document, including Column 4, Line 14 - Column 7, Line 26*).

Regarding claim 19, **Dingwall** discloses the converter further comprises a switch module [e.g., *Fig. 2: 113, 114, 120*] coupled to the plurality of second current routes for controlling the plurality of second current routes respectively to form the output current (*see the entire document, including Column 4, Line 14 - Column 7, Line 26*).

30. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Response to Arguments

31. Applicant's arguments filed 10 June 2008 have been fully considered but they are not persuasive.

Applicant's arguments with respect to claims 1, 3-5, 7-10, and 19 have been considered but are moot in view of the new ground(s) of rejection.

By such reasoning, rejection of the claims is deemed necessary, proper, and thereby maintained at this time.

Conclusion

32. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The documents listed on the attached '*Notice of References Cited*' are cited to further evidence the state of the art pertaining to display controllers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (571)272-7678. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on (571) 272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeff Piziali/
Primary Examiner, Art Unit 2629
17 December 2008